22OCT07

Study Plan

Straight Creek
Use Attainability Analysis

Submitted to:

Virginia Department of Environmental Quality
629 East Main Street
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Prepared by:

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On behalf of:

VA Mining Issues Group
Formerly known as VA Coalfields TMDL Group

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Preface

Biological Monitoring, Inc. (BMI) was contracted by the Virginia Mining Issues Group (Group) to provide technical expertise regarding Straight Creek (Lee County, VA) Total Maximum Daily Load (TMDL) issues. Those TMDL issues centered on Straight Creek's biological impairment and remediation goals. The Group questioned whether complete attainment is possible based on required effluent limits and cost effective and reasonable best management practices. Therefore, the Group proposed to conduct an aquatic life Use Attainability Analysis (UAA) to determine appropriate and achievable goals for Straight Creek.

A UAA is a structured scientific assessment of the factors affecting the attainment of the designated use. Designated uses are those uses specified in water quality standards for each water body or segment whether or not they are being attained. A UAA may include assessments of physical, chemical, biological, and economic factors. A document providing reasonable grounds that the use may be unattainable was prepared by BMI and submitted on behalf of the Group to the Virginia State Water Control Board (SWCB). The SWCB granted permission to proceed with the UAA based upon certain conditions. For example, the UAA study plan must be presented for public comment and ultimately approved by the Virginia Department of Environmental Quality (VA DEQ).

This UAA study plan reflects appropriate Federal and State Water Quality Standards regulations. The UAA study plan envisions the use of collected data to characterize the conditions that exist in Straight Creek. This characterization will allow the development of a predictive tool for estimating attainable aquatic life use in the watershed. As such, the UAA process will be integrated with the phased TMDL Implementation Plan (IP) and VPDES permits. The predictive tool will be used to forecast biological conditions in Straight Creek and its tributaries based upon remediation efforts recommended during the IP, the permitting process, and this UAA. Ongoing IP and permitting efforts will be monitored and integrated with this UAA. The predictive tool will be validated by

monitoring the effects of phased remediation efforts. In this manner, appropriate goals for improvements in Straight Creek and its tributaries may be achieved.

This study plan was prepared by BMI in cooperation with VA DEQ staff. There were numerous conference calls held between BMI and VA DEQ staff to define the procedural, conceptual and technical requirements of this UAA. Recommendations were incorporated into each of several drafts as the study plan was developed. This document represents a culmination of these efforts. As this effort moves forward, study refinements may occur.

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1.0 Introduction

1.1 General

A Use Attainability Analysis (UAA) is a structured scientific assessment of the factors affecting the attainment of the Designated Use. A designated use is defined as:

> *The water quality standards regulation requires that States and authorized Indian Tribes specify appropriate water uses to be achieved and protected. Appropriate uses are identified by taking into consideration the use and value of the water body for public water supply, for protection of fish, shellfish, and wildlife, and for recreational, agricultural, industrial, and navigational purposes. In designating uses for a water body, States and Tribes examine the suitability of a water body for the uses based on the physical, chemical, and biological characteristics of the water body, its geographical setting and scenic qualities, and economic considerations. Each water body does not necessarily require a unique set of uses. Instead, the characteristics necessary to support a use can be identified so that water bodies having those characteristics can be grouped together as supporting particular uses. (http://www.epa.gov/waterscience/standards/about/uses.htm).*

A UAA may include assessments of physical, chemical, biological, and economic factors. A UAA evaluates the reasons for use non-attainment, as well as provides a prescription for attaining the best use in a water body through remediation. The ultimate goal of any UAA is to determine the highest attainable use.

There are a number of factors preventing the attainment of the designated aquatic life use in Straight Creek. Some of these factors can be remedied and some may not be. For example, ongoing abandoned mine land projects will likely improve water quality. Some factors may not be remediable due to technical, social and economic limitations (*e.g.* housing, roads and railroads). Straight Creek is not being abandoned. Some improvements can be achieved. The purpose of this UAA is to determine the appropriate level of designated use that is attainable.

A key concept in assigning designated uses is "attainability," or the ability to achieve water quality goals under a given set of natural, human-caused, and economic conditions.

Appropriate and defensible water quality standards are essential for achieving the Clean Water Act goals of maintaining and restoring water quality - - and getting WQS right starts with getting designated uses right (EPA, 2006). The overall success of pollution control efforts depends on several factors, including a reliable set of underlying designated uses in water quality standards. Setting attainable water quality goals is important in stimulating action to improve water quality. Setting attainable uses advances actions to improve water quality.

Many designated use changes have occurred as a result of informative and compelling demonstrations provided by UAAs. A review of many UAA case studies reveals the breadth and variety of UAAs (EPA, 2006). In some cases, such as the one for Chesapeake Bay, the UAA is extensive and resource-intensive. However, there are many effective UAAs that are much simpler, for example by conveying the appropriate designated use expectations principally through a set of photographs documenting the physical characteristics of the water body.

> *It is the prospective analysis of future attainability of designated uses that provides the demonstration necessary to support a use change. The EPA UAA program experience and future direction reflects a growing practice of "sub-categorizing" or "refining" designated uses; that is, making them more specific and precise as opposed to removing them (http://www.epa.gov/waterscience/standards/uaa/info.htm).*

The UAA process integrates ecological data to arrive at a more thorough understanding of how the various forces in and around a particular stream interact. This UAA will use these data to develop a tool that will allow the biological condition of Straight Creek to be predicted based on other conditions in the watershed. The predictive tool will be used to determine the highest attainable aquatic life use based on the conditions expected and observed in Straight Creek after prescribed remediation.

1.2 Project Background

In July 2006, House Bill 1457 was enacted to amend § 62.1-44.19:7 of the Code of Virginia (Plans to Address Impaired Waters). The amendment is as follows:

> *E. If an aggrieved party presents to the Board reasonable grounds indicating that the attainment of the designated use for a water is not feasible, then the Board, after public notice and at least 30 days provided for public comment, may allow the aggrieved party to conduct a use attainability analysis according to criteria established pursuant to the Clean Water Act and a schedule established by the Board. If applicable, the schedule shall also address whether TMDL development or implementation for the water should be delayed.*

In October 2006, VA DEQ received from the Virginia Coalfields TMDL Group a document titled *Reasonable Grounds Documentation to Conduct an Aquatic Life Use Attainability Analysis for Straight Creek, Lee County, Virginia* (Attachment I). This documentation asserts that attainment of the designated use for aquatic life may not be feasible because many of the impacts on the watershed may be irremediable.

Pursuant to § 62.1-44.19:7 of the Code of Virginia, a notice of public comment period was published in the Virginia Register on October 5, 2006. The comment period ended November 9, 2006. The Notice stated that the Board was seeking comment on the documentation submitted and if it constitutes reasonable grounds that attainment of the aquatic life use for Straight Creek is not feasible.

Comments from thirteen organizations were received and were summarized by VA DEQ (Attachment II). The comments were polarized with the environmental organizations urging VA DEQ to demand more objective information from the Group. They also expressed concern that the aquatic life use is an existing use which cannot be removed. The regulated community asked the Board to move forward and allow the UAA to be conducted.

VA DEQ staff held a meeting on January 26, 2007 with those who commented and the Group to allow for further explanation of the proposal and discussion of comments. Based upon that meeting, the Group provided additional information on February 2 to supplement their initial submission (Attachment III).

At its meeting on March 9th, 2007, the State Water Control Board (SWCB) determined that reasonable justification had been presented to move forward with this UAA according to criteria established pursuant to the Clean Water Act and in conformance with 9 VAC 25-260-10. A set of the relative SWCB minutes (Minute 13) has been included (Attachment IV). The SWCB granted permission to proceed with the UAA subject to the following five conditions:

1. A TMDL Implementation Plan to address the aquatic life use impairment shall be submitted to VA DEQ by December 31, 2007 and approved by the Board. The Plan must identify the reasonable and cost-effective remediation steps required for use attainment under 9 VAC 25-260-10 E and I.

2. A UAA study plan shall be presented for public comment and approved by VA DEQ before initiation of the UAA study.

3. On-going implementation of cost-effective and reasonable best management practices identified in the TMDL Implementation Plan and Virginia Pollutant Discharge Elimination System (VPDES) permits shall continue so the response of the aquatic system to the implementation of these practices is included in the UAA study.

4. Upon completion of the UAA study, VA DEQ staff will report back to the Board whether the results of the UAA study are deemed consistent with federal and state regulations and warrant initiating a rulemaking to establish subcategories of the designated use for aquatic life in all, or portions of, Straight Creek.

5. Moving forward with this study does not establish any precedent for what constitutes "reasonable grounds" under § 62.1-44.19:7.

2.0 Project Description and Objectives

2.1 Purpose of Study

The purpose of this study is to conduct a Use Attainability Analysis (UAA) on Straight Creek in Lee County, Virginia. As defined in the Water Quality Standards Regulation, a UAA is a structured scientific assessment of the factors affecting the attainment of the use which may include physical, chemical, biological, and economic factors as described in Title 40 of the Code of Federal Regulations (40 CFR 131.10 g). The UAA will be conducted on the designated aquatic life use of Straight Creek.

Upon completion of this UAA study, one of four possible recommendations regarding the designated aquatic life use could be made. First, it is conceivable that the designated aquatic life use (DALU) and its criterion be retained. Alternatively, the DALU could be retained with a new site specific criterion proposed. Third, a sub-category of the DALU and a new criterion could be proposed. Finally, although unlikely, a proposal to remove the entire DALU could be made.

2.2 Study Area

Straight Creek is located in Lee County, Virginia and is a tributary of the Powell River / Upper Tennessee River system. The headwaters begin near the Kentucky / Virginia border and flow south through St. Charles and connect to the North Fork Powell River near Pennington Gap Virginia. The area is located on the Pennington Gap United States Geological Survey (USGS) 7.5’ quadrangle (Figures 1 - 2). Land uses in the watershed consist of forest, residential and mining. This watershed has a long history of timber harvesting, mining and residential influences.

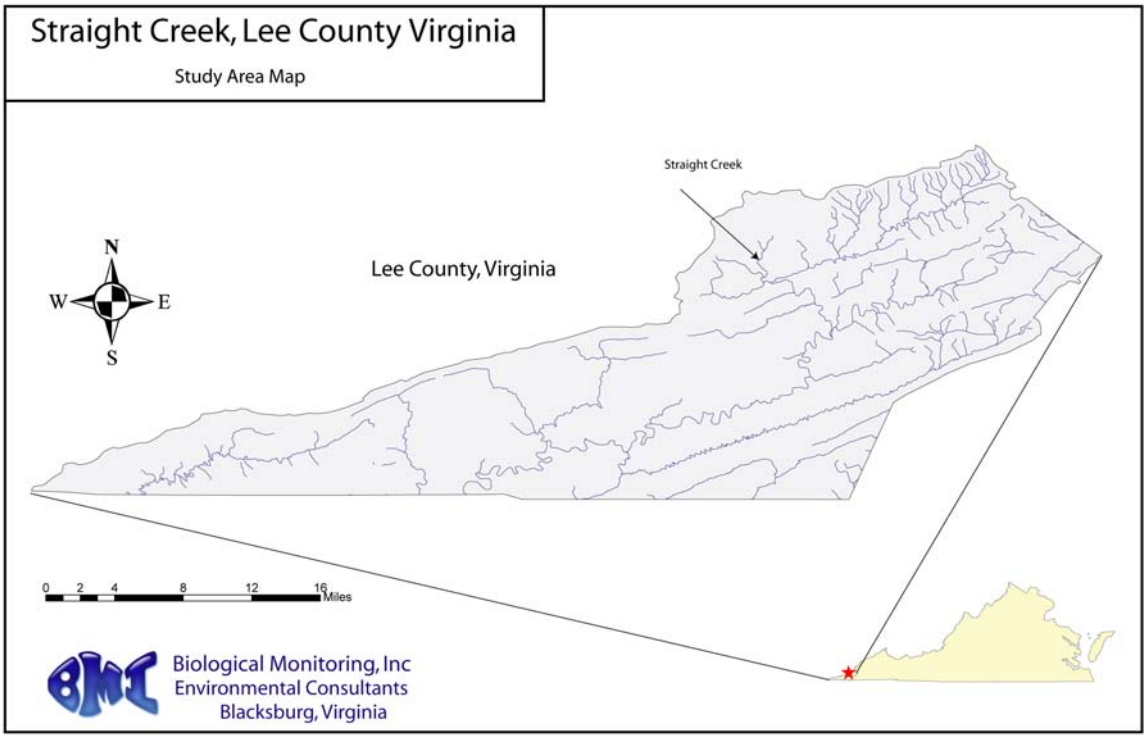

Figure 1 Location Map

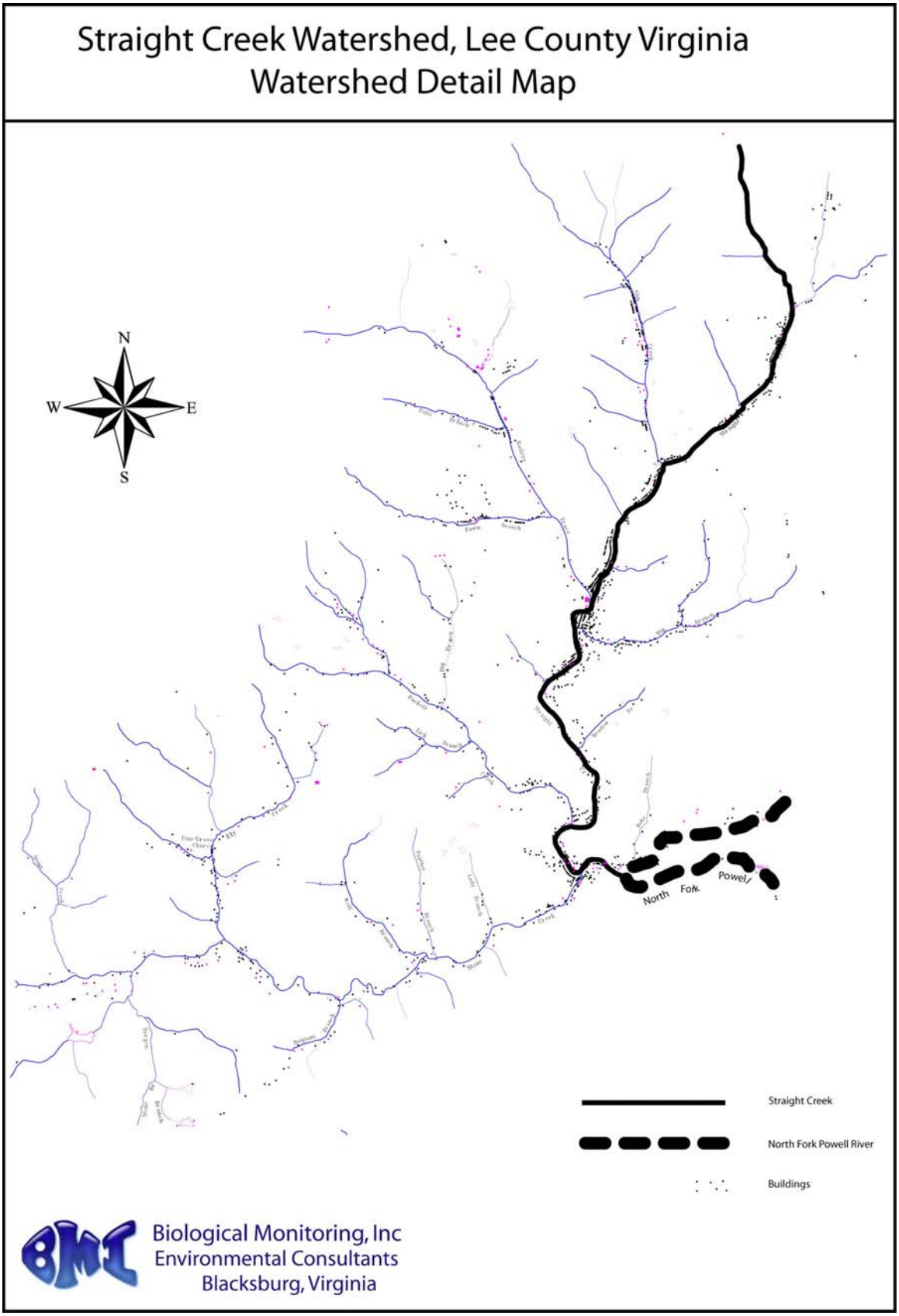

Figure 2 Detail Map of Study Area

2.3 TMDL Information

Straight Creek was determined to be impaired (bacterial standard) and included on the 1994 Virginia 303 (d) list of impaired waters. In addition, Straight Creek was determined to be impaired (general standard, benthic macroinvertebrate) and included on the 1996 Virginia 303 (d) list of impaired waters. As such, a Total Maximum Daily Load (TMDL) study was conducted in 2005 and 2006. The TMDL identified unregulated sewage discharges and failing septic systems as the primary causes of the bacterial impairment. Furthermore, that study identified sedimentation and Total Dissolved Solids (TDS) as the most probable stressors affecting benthic health.

The Implementation Plan (IP) of the TMDL and VPDES permitting will be integrated with this UAA. Implementation efforts will be phased and will address both the bacterial and aquatic life use impairments. This UAA effort will focus only on the aquatic life use impairment. However, any and all TMDL IP remediation efforts could improve the ecological health of Straight Creek and/or its tributaries.

Implementation efforts are underway in the Straight Creek watershed. For example, there are abandoned mine land projects and sewage system development. Monitoring efforts continue (physical, chemical, biological) and pertinent data has been and will continue to be compiled before, during and after the projects have been completed.

2.4 Project Objectives

The United States Environmental Protection Agency (EPA) Technical Support Manual: *Water Body Surveys and Assessments for Conducting Use Attainability Analyses* contains technical guidance to assist States in implementing Water Quality Standards Regulations (EPA, 1983). In addition, the EPA Water Quality Standards Handbook (EPA, 1994) provides background information and a framework for the conduct of a UAA. Over the past several years, the EPA has been conducting regional UAA workshops and now has a web site dedicated to the UAA process (http://www.epa.gov/waterscience/standards/uaa/info.htm).

The EPA recognizes that consideration of the suitability of a water body for attaining a given use is an integral part of the water quality standards review and revision process. EPA UAA guidance is intended to assist States in answering three central questions. These questions have been incorporated into this UAA study as the objectives. These questions are:

1. Is the Designated Aquatic Life Use an Existing Use?
2. What is preventing the Designated Aquatic Life Use Attainment?
3. What is the Highest Attainable Aquatic Life Use after remediation?

This study plan presents methods for answering these three questions. In addition, ongoing and anticipated remediation and monitoring efforts are presented.

3.0 Is the Designated Aquatic Life Use an Existing Use?

3.1 Current Designated Use

Designated uses are those uses specified in Water Quality Standards for each water body or segment whether or not they are being attained. All Virginia waters are designated for the following uses:

> …recreational uses, swimming and boating; the propagation and growth of a balanced, indigenous population of aquatic life, including game fish, which might reasonably be expected to inhabit them; wildlife; and the production of edible and marketable natural resources, fish and shellfish (9 VAC 25-260-10, **http://www.deq.state.va.us/wqs/documents/WQS_eff_9_11_07.pdf**).

Through the protection of these minimum uses, other uses such as industrial water supply, irrigation and navigation also are protected. Should additional standards be needed to protect other uses as dictated by law (such as public water supply) or improved knowledge, they will be adopted.

From a regulatory standpoint, the designation of uses are established by the Clean Water Act and its subsequent amendments and promulgated in the Code of Federal Regulations (40CFR131.10). All States are required to specify appropriate water uses to be achieved and protected. However, States are encouraged to refine uses by adopting sub-categories of uses and setting appropriate criteria to more accurately reflect varying needs of uses and subcategories of uses. For example, a State may designate a body of water as a coldwater versus warmwater fishery. States may also adopt seasonal uses with varying criteria. Virginia has designated seasonal uses in the Chesapeake Bay. In designating a use for a water body with the appropriate criteria, consideration must be made for the water quality standards downstream and shall ensure that its water quality standards provide for the attainment and maintenance of the water quality standards of downstream waters. Any recommendations resulting from this UAA will take into account downstream water quality standards.

Determination of the attainment of the designated aquatic life use throughout Virginia's freshwater ecosystems has been based upon macroinvertebrate survey guidelines (VA DEQ, 2007). The Straight Creek TMDL report presents 13 biological samples that were collected in Straight Creek from 1991 through 2004. The impairment rating of those samples is on average only 40% comparable to reference streams using the VA DEQ / EPA Rapid Bio-Assessment Protocol II (RBPII) method of water body assessment. This approach quantifies the benthic impairment to be classified at the lower end of the "Moderately Impaired" range. In addition to the RBPII method, the VA DEQ-validated draft Virginia Stream Condition Index (VSCI) method, scheduled to be implemented in the 303(d)-305(b) report, was used to score the stream's biological condition in the Straight Creek TMDL report (VA DEQ, 2007). The VSCI scores averaged 38 out of a possible 100, which is well below the proposed impairment threshold of 60.

These data demonstrate that Straight Creek is not simply a few points shy of achieving aquatic life use attainment. Although a TMDL study has been conducted, the VA DEQ has not yet had an opportunity to study non-pollutant contributions (*e.g.*, channel alteration, loss of riparian habitat, etc.) to impairment or their relative impact on the proposed restoration efforts. While control measures directed at pollutants like bacteria, TDS and TSS may in some cases help to improve biological condition, conventional ecological theory tells us that there are also many non-pollutant factors that influence the aquatic community (EPA, 2005). Straight Creek's non-pollutant factors may hinder restoration, even with pollutant control measures in place. These non-pollutant factors must be addressed to assess the level of aquatic life use that can be attained in Straight Creek. This UAA will identify and assess pollutant and non-pollutant factors and their possible impacts on use attainment (even with pollutant control measures in place).

3.2 Existing Use

An Existing Use is defined as a use actually attained in the water body on or after November 28, 1975, whether or not it is included in the water quality standards (40 CFR 131.3). It is hypothesized that on or after November 28, 1975, Straight Creek and its

tributaries have not been any better than their present condition. To define the Existing Use of Straight Creek and its tributaries, available information gleaned from the sources listed below may be examined.

1. Historical Records
    a. Tennessee Valley Authority (TVA) Flood studies circa 1960s
    b. Virginia Department of Transportation (VDOT) records
    c. Railroad maps
    d. Newspaper records
    e. Film collections
    f. Other public records

2. Existing Ecological Records
    a. Scientific publications
    b. Permitting agency accounts
    c. TVA fish data
    d. Ongoing ecological studies

3. Anecdotal/Firsthand Accounts

The information gathered will be integrated so as to infer biological conditions on/after November 28, 1975.

4.0 A Tool to Predict Biological Condition

4.1 Introduction

A tool will be developed to predict biological condition based on stressors / pressures. This predictive tool will involve three distinct steps. These three steps include:

1. Determine stressors / pressures preventing use attainment;
2. Determine post-remediation stressor / pressure level;
3. Predict highest attainable aquatic life use based on steps 1 & 2.

4.2 Step 1: Determine Stressors / Pressures Preventing Use Attainment

The TMDL identified two water quality parameters as the "most probable stressors" affecting impairment of the designated aquatic life use. This UAA will not be limited solely to water quality stressors. Other factors affect the assemblage of aquatic organisms in streams. Five such ecologic factors are discussed in EPA's Tiered Aquatic Life Use (TALU) documents. These five factors are:

a) Water Quality
b) Habitat Condition
c) Flow Regime
d) Energy Source
e) Biotic Interaction

Step one of this tool, unlike theoretical models, will be based on actual collected data. The first task will be to collect data from outside Straight Creek, and develop a gradient of stressors / pressures versus biological condition. Since a gradient of stressors / pressures versus biological condition must be developed, the data that are to be collected must represent a broad range of conditions. Data must be collected from streams having a broad range of both the stressors / pressures and a broad range of biological conditions.

Then, data from Straight Creek (and perhaps others) will be compared to these gradients so as to validate the tool. The tool needs to accurately predict the measured responses (stressors / pressures and biological condition). This approach is similar to the concept of a Biological Condition Gradient (BCG) and/or the Human Disturbance Gradient (HDG) of a TALU as described by Davies and Jackson (EPA, 2005).

The difference between the original and this UAA's application of the BCG conceptual framework is in the selection of biological tiers. The original concept involves selection of biological attributes (narrative and numeric) for up to six tiers of biological condition (Figure 3). The tiers are determined by a consensus of experts such as regional biologists. Given the limited resources and narrow geographic scope of this UAA, it will instead rely on the narrative and numeric criteria for four tiers already developed and presented in the Virginia Stream Condition Index (VSCI) validation report (VA DEQ, 2006).

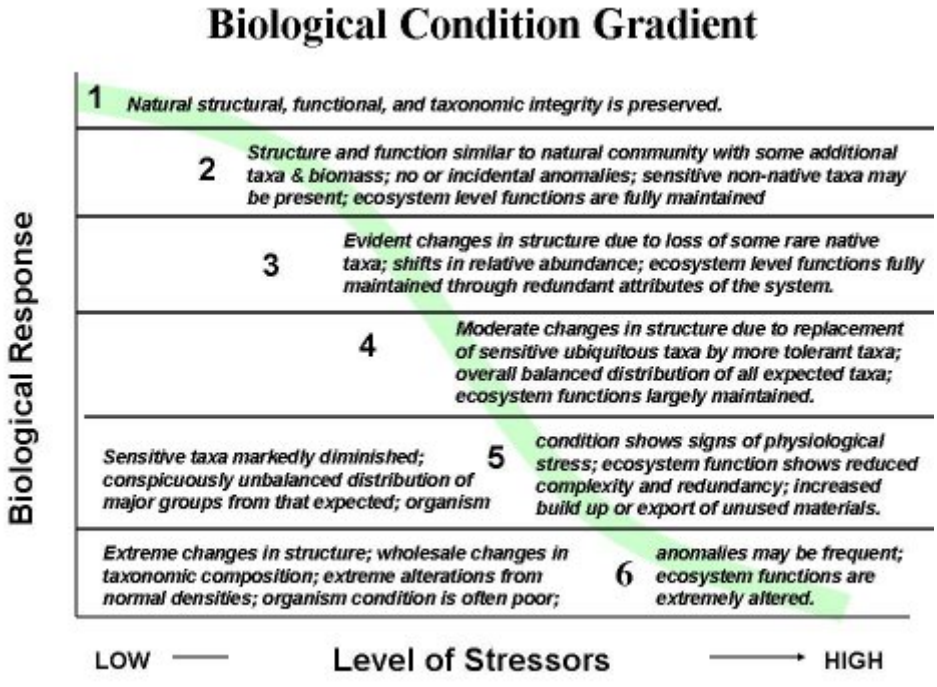

Figure 3 Conceptual Biological Condition Gradient

The predictive tool envisioned for this UAA will examine many streams ranging from very good to very bad biological and disturbance levels. This examination is necessary to develop a tool with application over a broad range of conditions. Next, each of the streams will be classified into one of the VSCI tiers. Then, those same streams will be classified into one of several tiers of stressor / pressure intensity. For example, one stressor gradient could be low, medium, and high RBP habitat quality. Finally, statistical analyses (*e.g.*, discriminant analysis, etc.) will be performed to determine whether stressor tiers can discriminate between VSCI tiers. The relationship could look something like Figure 4. This procedure would be repeated with each candidate stressor/pressure, creating multiple candidate relationships. Techniques such as the weight of evidence approach and EPA risk assessment methods may then be applied to determine the strongest and most appropriate relationships that will comprise the final predictive tool.

Figure 4 Conceptual Biological Condition Gradient Using VSCI

The gradient of stressors / pressures and biological condition developed will be calibrated to Straight Creek. Calibration will ensure that the available stressor / pressure data for Straight Creek is predictive of its respective biological condition. Validation will use the same approach, but with a subset of Straight Creek data that is withheld from the development and calibration phase.

Step 1 of the predictive tool will be applied to Straight Creek to determine the stressors / pressures preventing aquatic life use attainment. The validated relationship from Step 1 will specify the stressors / pressures that are predictive of Straight Creek's current biological condition. These stressors / pressures will be the factors preventing aquatic life use attainment.

4.3 Step 2: Determine Post-Remediation Stressor / Pressure Levels

A post-remediation model will be developed based on empirical data to predict the stressor / pressure level following remediation efforts. In order to determine feasible remediation efforts, the UAA study will be integrated (shared data, modeling, etc.) with the Straight Creek TMDL Implementation Plan (IP) and VPDES permitting process. Other concepts for determining feasible remediation efforts may include Risk Assessments and Environmental Impact Statement (EIS) framework (*e.g.*, Alternatives Analysis).

The results of these implementation efforts will be used to develop the post-remediation model. The model will be developed using data from ongoing remediation, historic and current monitoring, literature, and Best Management Practice (BMP) modeling. In fact, remediation and monitoring efforts have been underway since TMDL approval.

The post-remediation model will be validated by monitoring the effects of the phased remediation efforts. In this manner, appropriate goals for improvements in Straight Creek and its tributaries may be achieved.

4.4 Step 3: Predict Highest Attainable Aquatic Life Use

No assumption has been made that Straight Creek has no aquatic life use. However, the VSCI score the State uses to determine impairment may be unattainable in Straight Creek. It is not envisioned that the use will be removed. Instead, new criteria may be adopted to protect the attainable use. Another possibility is that a subcategory of use (*e.g.*, limited warmwater fishery) may be applicable. Any proposed change to the designated use or criteria is subject to formal rule making and public comment. Such changes are outside the scope of this UAA.

Once post-remediation watershed conditions have been estimated (Step 2), the highest attainable use can be determined. The output of the post-remediation model (Step 2) will be applied to the relationship between stressors / pressures and biological condition (Step 1). This process will specify the highest attainable aquatic life use and the criteria to protect that use.

5.0 Ongoing and Anticipated Efforts

5.1 Remediation

The following list of remediation efforts is anticipated through the integrated TMDL IP process. As the IP matures, additional remediation efforts may be included. Likewise, the IP process could conceivably remove items from this list. The IP process has not developed a timeline for implementation of the items in the following list. However, the fact that the process will be phased must be recognized. Following the implementation of individual remediation items, data collected during monitoring phases would be used to validate the predictive tool. Thus, appropriate goals for improvements in Straight Creek and its tributaries may be achieved.

a) Abandoned Mined Lands
   - Largest contributor of stressor loading (80% TSS) to the watershed (Approved Straight Creek TMDL)
   - Largest non-forest land use (13%) in the watershed (Approved Straight Creek TMDL)
   - Very limited funding & low priority sites (DMME)

b) St. Charles North Sewer Expansion
   - 90 % Complete
   - 110 New Hookups
   - Provides immediate opportunity to gauge the response of the aquatic system as required by SWCB Minute 13 (SWCB March 2007)

c) Fawn Branch Decentralized Sewer System
   - Begins Spring 2008
   - Completion by August 2008
   - 11 New Hookups
   - Provides another early mechanism to gauge the response of the aquatic system as required by SWCB Minute 13 (SWCB March 2007).

d) Lee County industrial remediation project
   - Coal tipple site on Straight Creek
   - Other projects

e) BMPs for Point Source (LMPI)

- Revegetation rate has already increased in impoundment areas
- Road Sump and pond cleanout preventative maintenance schedules have been implemented (less pass through).

f) Stream Bank Stabilization Projects
   - IP will quantify sites & expected load reductions
   - For example, Gin Creek

g) Riparian Vegetation Projects
   - IP will quantify sites & expected load reductions
   - For example, Straight Creek below St. Charles

h) Stream Channel Geomorphic Restoration
   - IP will quantify sites & expected load reductions
   - For example, Straight Creek above LMPI office

i) USACE Remediation Projects
   - More details needed
   - Load reductions for each effort will be calculated based upon TMDL documents

5.2 Monitoring

Straight Creek has a long history of ecological monitoring. Monitoring is underway and will continue during remediation to gauge effectiveness. Data gathered will be used in UAA development. These efforts include:

a) Benthic monitoring since 2005 to gauge the response of the aquatic system.

b) Fish Surveys

c) Quantitative physical habitat assessments via Environmental Monitoring and Assessment Program (EMAP)

d) Qualitative physical habitat assessments (RBP)

e) Continuous rainfall collection

f) Continuous conductivity monitoring

6.0 Coordination of UAA Study Plan with TMDL IP

A TMDL Implementation Plan is currently being developed for Straight Creek, the final version of which is expected to be presented to the State Water Control Board for approval in December 2007. This UAA Study Plan includes measures that we anticipate will be included in the Board-approved TMDL Implementation Plan. However, following Board approval, we will revisit the UAA Study Plan to determine whether any adjustments are necessary for consistency with the TMDL Implementation Plan. Any such adjustments will be presented to DEQ for review and approval using the same process as the one for this initial phase of the UAA Study Plan.

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Glossary

- BCG Biological Condition Gradient
- BMI Biological Monitoring, Inc.
- BMP Best Management Practice
- CFR Code of Federal Regulations
- DALU Designated Aquatic Life Use
- DMME Virginia Department of Mines, Minerals and Energy
- EIS Environmental Impact Statement
- EMAP Environmental Monitoring and Assessment Program
- EPA United States Environmental Protection Agency
- Group Virginia Mining Issues Group (Formerly known as Virginia Coalfields TMDL Group
- HDG Human Disturbance Gradient
- LMPI Lone Mountain Processing, Inc.
- RBP Rapid Bioassessment Protocol
- SWCB Virginia State Water Control Board
- TALU Tiered Aquatic Life Use
- TDS Total Dissolved Solids
- TSS Total Suspended Solids
- TMDL Total Maximum Daily Load
- TMDL IP Total Maximum Daily Load Implementation Plan
- TVA Tennessee Valley Authority
- UAA Use Attainability Analysis
- USACE United States Army Corps of Engineers
- USGS United States Geological Survey
- VA DEQ Virginia Department of Environmental Quality
- VDOT Virginia Department of Transportation

Attachment I: Reasonable Grounds Documentation

Reasonable Grounds Documentation to conduct an Aquatic Life Use Attainability Analysis for Straight Creek, Lee County, Virginia under VAC 62.1-44.19:7

Submitted To:

Virginia State Water Control Board

Submitted By:

Virginia Coalfields TMDL Group

October 2, 2006

1.0 Introduction / Background

1.1 General

In 2006, the Virginia General Assembly amended Va. Code § 62.1-44.19:7 to provide a process for evaluating the attainability of designated uses (Acts of Assembly Chapter 154). The amendment reads as follows:

> *If an aggrieved party presents to the Board reasonable grounds indicating that the attainment of the designated use for a water is not feasible, then the Board, after public notice and at least 30 days provided for public comment, may allow the aggrieved party to conduct a use attainability analysis according to criteria established pursuant to the Clean Water Act and a schedule established by the Board. If applicable, the schedule shall also address whether TMDL development or implementation for the water should be delayed.*

The amendments contemplate that the proponent of a use attainability analysis (UAA) will offer justification to VDEQ, who in turn will provide opportunity for public review and then action by the State Water Control Board. The Board will allow the proponent to conduct a UAA where there are reasonable grounds to indicate that attainment is not feasible. The UAA must comply with relevant regulatory criteria (40 CFR 131.10(g) and 9 VAC 25-260-10 G). The results of the UAA may provide a basis for amending designated uses and/or the criteria assigned to protect those uses (see, for example, the refined uses and criteria for aquatic life in the Chesapeake Bay watershed).

The Virginia Coalfields TMDL Group is interested in conducting a UAA in Straight Creek. This report outlines the various factors that may prevent attainment of the designated aquatic life use in Straight Creek. The Group respectfully submits that these factors meet the "reasonable grounds" standard in Va. Code § 62.1-44.19:7 for the Board to allow a UAA.

1.2 Watershed Background

Straight Creek is located in Lee County, Virginia and is a tributary of the Powell River / Upper Tennessee River system. The headwaters begin near the Kentucky / Virginia border and flow south through the town of St. Charles and connect to the North Fork Powell River near Pennington Gap Virginia. Straight Creek reaches fourth order status after the confluence of Stone Creek near the mouth. The area is located on the Pennington Gap USGS 7.5' quadrangle. Maps of the area are presented as Figures 1 and 2.

Landuses in the watershed include forest, residential and mining. This watershed has a long history (over 100 years) of timber harvesting, mining and residential influences. The narrow valley floor of Straight Creek has received the majority of the persistent human disturbance (Photos 1, 2). The Straight Creek watershed has approximately 1200 buildings, a network of roads, more than 25 bridges, a railroad, and approximately 2210 acres of historical (*i.e.*, Pre Law SMCRA 1978) mining.

1.3 Project Statement

Straight Creek has been identified as attaining neither its designated aquatic life use (benthic impairment), nor its primary contact recreation use (fecal bacteria impairment). Virginia DEQ has studied conditions in the creek and determined that the uses may be restored through implementation of controls on bacteria, Total Dissolved Solids (TDS), and Total Suspended Solids (TSS) sources in the Straight Creek watershed. The UAA proposed herein will address only the aquatic life use impairment.

It should be noted that the benthic impairment is at the lower end of the "Moderately Impaired" range. The Straight Creek TMDL report presents 13 biological samples that were collected in Straight Creek from 1991 through 2004. The impairment rating of those samples is on average only 40% comparable to reference streams using the official VDEQ RBPII method of waterbody assessment. In addition to the RBPII method, the VDEQ-validated draft Virginia Stream Condition Index (VSCI) method, scheduled to be

adopted in 2008, was used to score the stream's biological condition in the Straight Creek TMDL report. The VSCI scores averaged 38 out of a possible 100, which is well below the proposed impairment threshold of 60. These data demonstrate that Straight Creek is not simply a few points shy of achieving aquatic life use attainment.

DEQ has not yet had an opportunity to study non-pollutant contributions to impairment or their relative impact on the proposed restoration efforts. While control measures directed at pollutants like bacteria, TDS and TSS may in some cases help to improve biological condition, conventional ecological theory tells us that there are also many non-pollutant factors that influence the aquatic community (USEPA 2005). Straight Creek's non-pollutant factors may hinder restoration, even with pollutant control measures in place. These non-pollutant factors must be addressed if an aquatic life use is to be realistically attainable. Our proposed UAA study will identify and assess pollutant and non-pollutant factors and their possible impacts on use attainment (even with pollutant control measures in place).

A UAA is a structured scientific assessment that examines the factors affecting the attainable use in a body of water. Unlike traditional water quality management (which focuses on pollutants), the UAA process considers <u>all</u> factors affecting the stream, both pollutant and non-pollutant. The UAA also takes into account the social and economic ramifications of conceivable restoration efforts in the watershed. UAAs are especially valuable in watersheds where the stream cannot meet its designated use due to factors outlined in 40 CFR 131.10(g). UAAs help to validate the existing designated uses or highlight changes that may be necessary (either to those uses or the criteria assigned to protect them). The UAA for the Chesapeake Bay is a leading example (albeit on a much larger scale) of a successful study that highlighted the need for refined uses and criteria to protect aquatic life.

The UAA proposed for Straight Creek will be much less complex than the UAA conducted for the Chesapeake Bay. Some UAAs can be quite simple, as is the case in other states such as Kansas and Alaska. Our proposed UAA study does not and will not

presuppose the need for changes to the existing designated uses. However, it will help to identify and assess non-pollutant factors that may hinder attainment.

Many of the observed impacts to Straight Creek, both physical and chemical, may be irremediable based on the human caused conditions that exist. The stream channel morphology has been altered to compensate for flooding events, housing and roads. Additionally, both underground and surface mining prior to November 28, 1975 has likely altered Straight Creek's water chemistry. In heavily developed watersheds, natural or near-natural stream conditions may be unattainable due to pressures from human activity (USEPA 2005). The Group believes that the extensive physical and chemical alterations to Straight Creek provide reasonable grounds to justify further study.

1.4 The UAA and the Use-Change Process

A Use Attainability Analysis is only one step in the larger process that must be undertaken before a designated use can be changed or refined. The larger use-change process involves the following steps:

Step 1: Is the designated use an existing use?

YES The process ends and no change is made to the designated use.

NO Conduct a Use Attainability Analysis, then proceed to Step 2.

Step 2: Is the designated use attainable?

YES The process ends and no change is made to the designated use.

NO Proceed to Step 3.

Step 3: Is use attainment prevented due to any factor in 40 CFR 131.10(g)?

YES A new or refined use may be proposed. Proceed to Step 4.

NO The process ends and no change is made to the designated use.

Step 4: Initiate administrative process to promulgate amended water quality standards, and then submit amendments to EPA for review and approval.

Steps are reached only if criteria of each prior step are met.

The UAA process requires the identification of existing uses, assessment of factors preventing use attainment, and determination of the highest use attainable, which is the use attainable after all effluent limits and/or cost effective and reasonable best management practices are considered. If the designated use cannot be attained due to any factor in 40 CFR 131.10(g), then a use change may be justified.

1.5 The UAA and TMDL Implementation

The Straight Creek UAA is proposed for development during the same timeframe scheduled for Straight Creek TMDL Implementation. The Virginia Coalfields TMDL Group anticipates taking the lead role in TMDL Implementation Plan development. The UAA will be conducted independent of, yet parallel to TMDL Implementation. Neither effort will have to wait for completion of the other. Where aspects of one effort may complement the other, collaboration will be pursued. For example, the first phase of TMDL implementation will include the imposition of fecal bacteria and TSS controls, as well as source identification and monitoring of TDS. Monitoring data developed during TMDL implementation will be valuable to the UAA effort, and vice versa. Also, efficacy of TSS and fecal bacteria controls will be evaluated and incorporated into the UAA process. It should be noted, however, that the Straight Creek UAA process will in no way dilute or distract from TMDL Implementation.

2.0 Laws Governing Use Change (40 CFR 131.10)

2.1 General

Changing a designated use is a procedure bound by regulations set forth in 40 CFR 131.10. Those regulations identify the issues that must be addressed when creating or modifying designated uses. The following sections describe the issues most pertinent to our proposed UAA study.

2.2 Downstream Uses - 131.10(b)

A designated use must ensure that downstream water quality standards are maintained. The Straight Creek UAA will address those standards in Straight Creek's receiving water, the North Fork of the Powell River (NFP). The UAA will determine the relative impact of Straight Creek on NFP uses and ensure that those uses are protected.

2.3 Attainable Uses Defined – 131.10(d)

Before a designated use change is justified, it must be determined whether the designated use is realistically attainable with pollution controls. If a designated use is deemed attainable through pollutant control measures, then it cannot be removed.

EPA's regulations provide that "[a]t a minimum, uses are deemed attainable if they can be achieved through imposition of effluent limits required under sections 301(b) and 306 of the [Clean Water] Act and cost-effective and reasonable best management practices for nonpoint source control."

The Straight Creek UAA will evaluate pollutant control measures and the biological improvement expected from such measures. If those measures will allow for use attainment, then no use change will be appropriate.

2.4 Existing Uses – 131.10(g) & (h)

To be eligible for removal, a designated use must not be an existing use. A designated use is the use that is specified for the water body and the use that is protected by water quality criteria. An existing use is any use that has actually been attained in a water body on or after November 28, 1975. For example, a basic designated use for streams in Virginia is aquatic life propagation, meaning the stream must be of sufficient quality to support a balanced aquatic community. If, however, the stream is of high enough quality to support trout perennially and actually does so, that stream has attained a higher existing use, commonly called a "trout fishery". The trout fishery may be a higher use than what the original designated use intended, but as long as that use is attained, it is considered an existing use and cannot be removed.

The Straight Creek UAA, per USEPA guidance (USEPA 1983, 1994, 2005), will be designed to determine the existing uses, as well as the highest attainable uses. The UAA will also be designed to determine whether site-specific criteria may be necessary to protect the highest attainable uses.

3.0 Factors Justifying Use Change

3.1 General

EPA's regulations provide that changing a non-existing designated use is justified if attainment of the designated use is not feasible due to one or more of six factors described in 40 CFR 131.10(g). The following sections discuss these six factors and how our proposed UAA study will address each.

3.2 Naturally Occurring Pollutants

The geologic composition of a watershed significantly influences water quality. For example, waters in limestone valleys tend to have greater dissolved solids concentrations than streams in granites valleys. These geologic factors can often dictate the water quality of a stream. The water quality characteristics in such streams constitute the natural background water quality that cannot be altered. The Straight Creek UAA will investigate the natural background water quality to determine if it could be limiting use attainment.

3.3 Flow Conditions

Appropriate flow regimes are necessary to maintain healthy aquatic communities. In some streams, intermittent flow or extremely low flow may prevent attainment of a designated aquatic life use. In other streams, channel alterations have led to increased velocity and hydraulic energy which has a scouring affect on the substrate. Very low flow has been observed in Straight Creek during late summer as well as very high flows following rain events. Existing data suggest the extremes of flow may be having a negative impact on biological condition. The flow regime of Straight Creek will be investigated during the UAA process to determine whether flow conditions are limiting use attainment.

3.4 Human Caused Conditions

Straight Creek has a long history of human activity. Such activity has generated pollutants and non-pollutant pressures that ultimately influence the aquatic community. Some of those impacts may be remedied while some may not. In some cases, remediation may be technically possible, but only at significant and substantial environmental cost – that is, the cure is worse than the disease. The Straight Creek UAA will evaluate whether the impacts of human-caused conditions or sources of pollution can be remedied or are more damaging to remedy than leave in place. Non-pollutants are afforded thorough consideration in this step, as they can be influential factors dictating the health of the aquatic community.

Non-pollutants that impact aquatic communities include a wide range of ecological attributes, such as energy sources, biotic interactions, habitat quantity and quality, and hydrologic conditions. In the case of Straight Creek, many of these factors have been influenced by human activity for over 100 years. Some of these disturbances may be remedied, but many others may not. For example, much of the stream is bordered by private land with more than 1000 structures. It may not be realistic to relocate buildings from the stream banks to allow for riparian corridor restoration or to reconnect the creek to its natural floodplain. Changes such as relocation of the stream channel, channel straightening, concrete shoring of banks, house and road construction, and riparian habitat removal can all negatively influence the ecological factors that dictate biological condition.

In cases where a waterbody has significant human disturbance, a modification of the designated use may be justified under 40 CFR 131.10(g)(3), which allows a use change when human caused conditions prevent attainment of the default designated use and cannot be remedied or would cause more harm than if left alone. The following section presents examples of human alterations that have been observed in Straight Creek and the impacts each alteration could have on aquatic life. Given the presence of so many pressures in the watershed, the UAA will study these factors to determine which can be

remedied through effluent limits or application of cost effective and reasonable best management practices.

3.4.1 Riparian Corridor Disruption

Much of Straight Creek's riparian vegetative zone has been removed or disrupted. Houses have been constructed on landfill mine spoil. The Virginia Department of Transportation (VDOT) has removed floodplain vegetation to control flooding per Tennessee Valley Authority (TVA) recommendations. Riparian vegetation removal can increase transport of fine sediment to the stream (USEPA 1995). Sedimentation has been identified as a most probable stressor to the aquatic community. Restoration of riparian vegetation could help reduce sedimentation and improve aquatic life, but there are practical limits to what level of restoration is feasible. Most of Straight Creek is bordered by private land. Revegetation of the riparian corridor may be infeasible without relocation of hundreds of houses and other buildings, roads, bridges, and the railroad. The UAA will use EPA guidance to evaluate these factors and determine the level of remediation that is realistically achievable.

3.4.2 Canopy Removal

Nearly all of the mid-channel canopy and much of the bank canopy has been removed from Straight Creek. This was likely a VDOT-performed flood control measure, as described in 1965 flood relief plans by the TVA (TVA 1965). Loss of canopy could also be a result of other watershed urbanization and associated riparian disturbance. Reduced canopy can increase a stream's exposure to sunlight, which in turn can alter the stream's energy source, food web and aquatic community structure (Hawkins 1982). This may be occurring in Straight Creek, as evidenced by several biological surveys that indicate a high proportion of filter feeding macroinvertebrates. In addition, the general lack of trees also equates to a lack of large woody debris. In natural streams, large woody debris creates habitat and helps dissipate flood energy (Poff et al 1997). Straight Creek is absent this important feature that enhances habitat quality and quantity. Canopy restoration would require the planting of trees, an effort that will face the same impediments as

riparian revegetation discussed above. The UAA will use EPA guidance to evaluate these factors and determine the level of remediation that is realistically achievable.

3.4.3 Increased Impervious Surfaces

Pavement, roofs, and lawns are all considered impervious surfaces. Much of the land immediately adjacent to the banks of Straight Creek is comprised of impervious surfaces. High proportion of near-stream impervious surfaces can alter the hydrology of the stream which can lead to flooding, habitat loss (scouring), channel alteration, and sedimentation (Barnes et al 2001, USEPA 1997). The impervious nature of the watershed also increases the likelihood of flash flooding which can lead to scouring and habitat/organism loss. Such flooding was observed in Straight Creek in January 2006, when more than two inches of rain fell in 24 hours. The flashy nature of Straight Creek is unlikely to change, since it would require removal or relocation of many square miles of paved roads, rooftops, sidewalks, railroad, and lawns. The UAA will use EPA guidance to evaluate these factors and determine the level of remediation that is realistically achievable.

3.4.4 Sedimentation

Sedimentation has been identified as a most probable stressor to the aquatic community of Straight Creek. Excessive fine sediment impacts the benthic organisms that characterize a healthy stream. Sediment abrades aquatic organism gills during floods and smothers them upon deposition. The embedding nature of fine sediment also causes the loss of microhabitat in the spaces between larger substrate particles (Reylea 2000). While some BMPs may help reduce sedimentation somewhat, there are many aspects of the creek that may not be remedied. The extremely incised channel, bank shoring, and channel relocation have resulted in elevated hydraulic energy that will exacerbate scouring and instream sediment transport. The UAA will use EPA guidance to evaluate these factors and determine the level of remediation that is realistically achievable.

3.4.5 Total Dissolved Solids

Total Dissolved Solids (TDS) has been identified as a most probable stressor to the aquatic community of Straight Creek. In Straight Creek, recently collected data reveal that the highest observed TDS concentrations have coincided with very low flows during periods of little or no precipitation (Fall 2005). High flows following moderate rains have led to low observed TDS concentrations (Winter 2006). The nature of Straight Creek's TDS loading and concentration appears to fluctuate with precipitation. Further study is needed to better understand the nature of TDS in the Straight Creek watershed.

Best management practices are an option to remediate TDS, but effectiveness of TDS BMPs is not well understood. In fact, a federally funded study is underway to assess and quantify the effectiveness of different types of TDS BMPs. Additionally, BMPs of any kind may be of limited utility when overland flow is zero. The UAA will also examine these issues by identifying and quantifying the discrete sources and nature of TDS loadings in the Straight Creek watershed. These data will then be evaluated to determine the level of TDS reduction that is realistically achievable.

3.4.6 Watershed Urbanization Cumulative Effects

The individual pressures described above are all a result of over 100 years of urban development in the Straight Creek watershed. Taken cumulatively, such development can have persistent negative impacts on aquatic community diversity (Roy et al 2003). Development in the near-stream riparian corridor has been shown to strongly dictate local aquatic community structure (Sponseller et al 2001). It may be infeasible to remove businesses, homes, and abandoned buildings from the stream banks or remediate major riparian corridor alterations. The UAA will use EPA guidance to investigate these cumulative urbanization impacts and determine the level of remediation that is realistically achievable.

3.5 Hydrologic Modification

A significant non-pollutant that impacts aquatic life is stream flow regime. A natural flow regime allows a stream to dissipate its energy via meander, riffles and channel obstructions, and floodplain connectivity (Poff et al 1997). Hydraulic energy dissipation capacity is critical because it prevents excessive hydraulic forces from being transferred to important habitat and the biota itself. Human development in a watershed can significantly alter flow regime via hydrologic modification such as channel straightening, bank revetment, bridge construction, and dredging (Poff et al 1997, USEPA 1997). These activities have occurred in the Straight Creek watershed at some time in its history for various reasons.

In cases where the hydrologic character of a waterbody has been significantly altered and is incapable of being remedied, a modification of the designated use may be justified under 40 CFR 131.10(g)(4), which allows a use change when irreversible hydrologic modifications preclude attainment of the designated use. The following section presents examples of hydrologic modifications that have been made in the Straight Creek watershed and the impacts that each could have on aquatic life. Given the extent of such modifications, the UAA will use EPA guidance to study the modifications and determine which are remediable.

3.5.1 Channel Alteration

The Straight Creek watershed has a history of substantial hydrologic modification. Flood control measures date at least to 1965, when the TVA created flood relief plans (TVA 1965). Measures to speed the evacuation of flood waters and protect property are at odds with the natural channel structure that promotes a healthy aquatic community. Recent quantitative habitat surveys indicate that the stream channel is deeply incised with poor instream habitat diversity. The UAA will use EPA guidance to evaluate these factors and determine the level of remediation that is realistically achievable.

3.5.2 Channel Relocation

The stream channel has been relocated and straightened where needed to make space for buildings, roads, and other human development. In many places, the channel has been moved to the very edge of the valley floor, where bedrock is the (undesirable) primary substrate. The recent quantitative habitat surveys indicate that the stream, as its name implies, exhibits very little sinuosity. Natural streams rely on sinuosity to dissipate flood energy and increase habitat variety. As a result of the straight, relocated channel, habitat diversity is lower than is necessary for use attainment.

3.5.3 Bank Revetment

Straight Creek has been disconnected from its flood plain for most of its length due to bank revetment. The stream channel has evolved into an unnatural trapezoid after years of bank alteration. Such modifications were often conducted to allow for construction of public roads in the Straight Creek watershed. During high flow events the stream cannot dissipate hydraulic energy. Increased hydraulic energy can cause extreme scouring, including removal or organisms and attached algae food sources (Poff et al 1997).

3.5.4 Bank Stabilization/Shoring

Much of Straight Creek's banks are permanently shored with concrete or stone walls. This could make reestablishment of riparian zone vegetative protection difficult. Permanent shoring structures increase water velocity, which increases hydraulic energy.

3.6 Natural Physical Conditions

Health of the aquatic community is dictated by many physical factors such as habitat. In streams with suboptimal habitat quality and quantity, or other poor physical features, aquatic health can suffer. Straight Creek habitat surveys by VDEQ and others have revealed that poor habitat may be limiting aquatic life potential. Some of the poor habitat may be due to human activity, but some of it may be due to natural conditions of the

stream. The UAA will examine such natural physical conditions to determine if they could be limiting use attainment.

3.7 Widespread Economic and Social Burden

To be effective, water quality improvement measures must be realistically achievable. If such measures cannot be afforded by a municipality or local economy, then they are not realistically achievable. All options for watershed improvement will be considered in the UAA processes. Only those that are deemed realistically achievable will be considered for application. Additional measures could be necessary to attain the designated use, but may be socially and economically infeasible. In such a scenario, use attainment would be limited due to widespread social and economic impacts. The UAA will determine whether such situations exist for Straight Creek.

4.0 Next Steps

After a 30-day notice-and-comment period, comments received will be addressed and a final version of this document will be completed. Then, this reasonable grounds document to conduct a Use Attainability Analysis for Straight Creek will be presented in December 2006 to the Virginia State Water Control Board (Board) for approval to proceed. Following Board approval, the Virginia Coalfields TMDL Group will cooperate with Virginia DEQ to 1) develop a public participation plan, 2) develop the UAA technical study plan, and 3) create a schedule for all activities, with relevant milestones.

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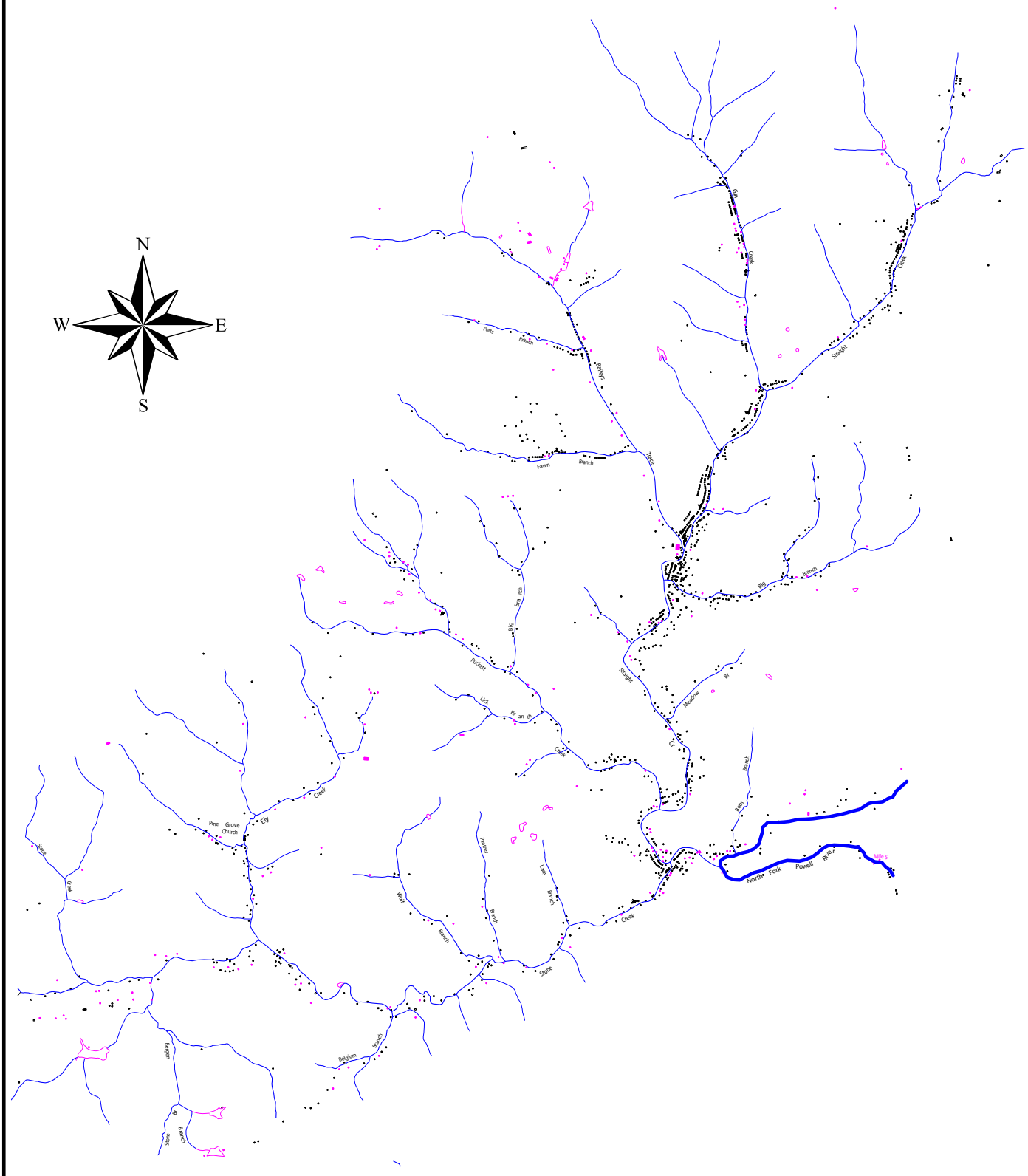
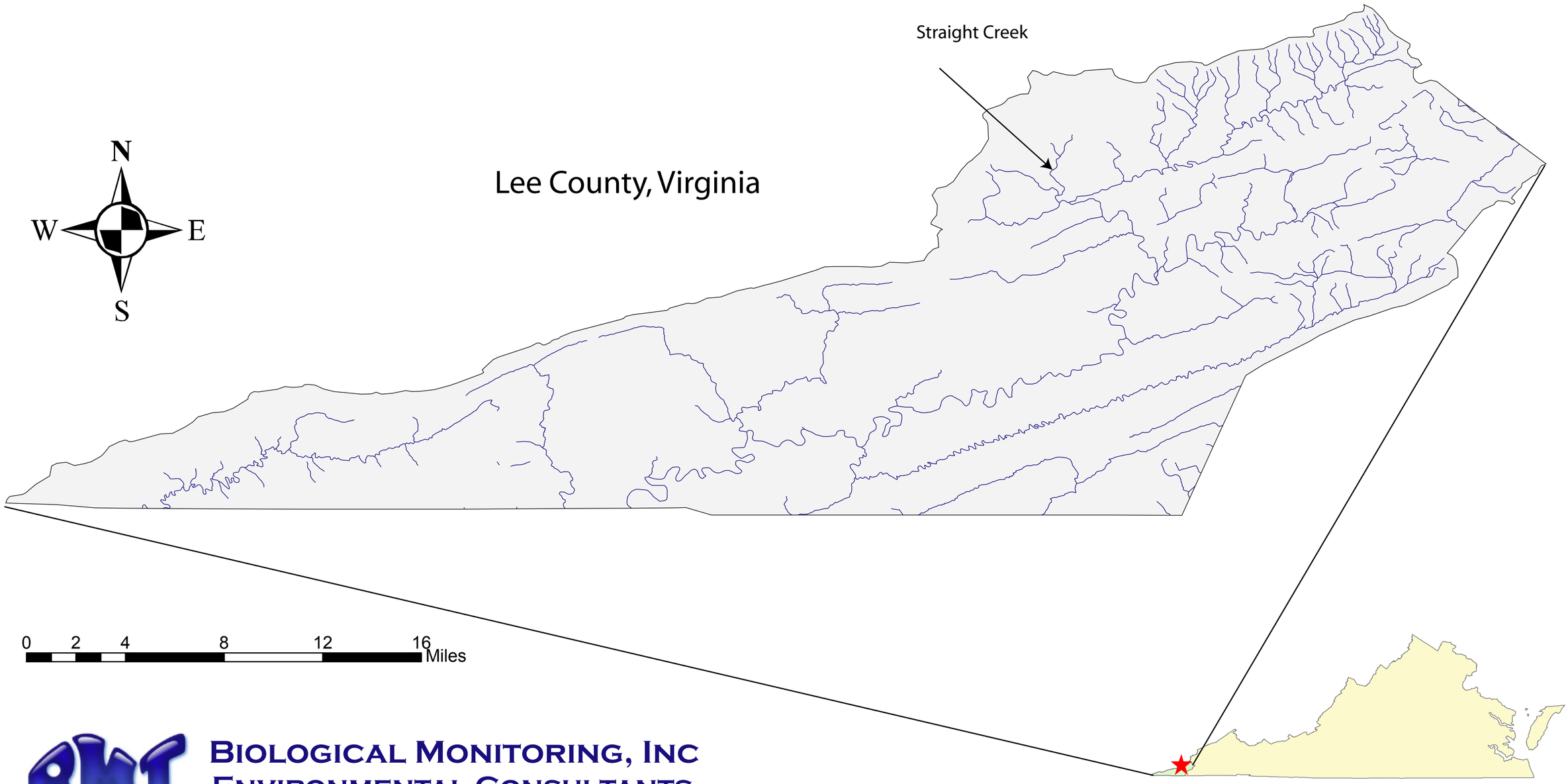
Straight Creek Watershed, Lee County Virginia
Watershed Detail Map



Biological Monitoring, Inc
Environmental Consultants
Blacksburg, Virginia

Straight Creek, Lee County Virginia

Study Area Map



Biological Monitoring, Inc
Environmental Consultants
Blacksburg, Virginia

Attachment II: Summary of Comments

Attachment II
Notice of Public Comment Period
Reasonable Grounds to Conduct an Aquatic Life Use Attainability Analysis
Public Comment Summary
Comment Period Ending November 9, 2006

Organization	Comment Summary
John T. Heard, Legislative Counsel, Virginia Coal Association, Inc.	Reasonable grounds meet and exceed the standards set forth in VA Code 62.1-44.19.7.E. Allow the Virginia Coalfields Total Maximum Daily Load (TMDL) Group (the Group) to conduct a use attainability analysis (UAA).
Dink Shackleford, Executive Director, Virginia Mining Association, Inc. Roger Jones Wise, VA	Supports the proposed UAA study. Many of the streams in the coal counties of Virginia are similar in topography, historic uses (as opposed to designated use), and current uses. The practices utilized by our forefathers in building the coal camps (which became the communities we recognize today), and the mining techniques of the times, did not protect the streams. As a result, we can make improvements but achieving a fishable/swimmable goal is not realistic. The Chesapeake Bay UAA recently demonstrated tiers of uses and we feel the non-Bay watersheds should be afforded the same opportunity.
Thomas G. Botkins, Jr., Environmental Manager, MeadWestvaco	Supports the UAA and believes the study has the potential to provide new knowledge on the impacts of nonpollutant factgors on aquatic life uses (flow conditions, hydrologic modifications, human caused conditions, etc.). Suggests changing section 1.4 where step 2 states that if the designated use is attainable, the process ends. The process should not end at that step if attainment of the use is not feasible and realistic as discussed in section 3.
Tad Nunley, Environmental Engineer, Wellmore Coal Company, LLC	Supports the request for a UAA. The impact of development on streams must be addressed if the TMDL is to be a useful tool for water quality improvement.
Mike Edwards, Environmental Manager, ALPHA Natural Resources, LLC Maxxim Shared Services, LLC	Supports the proposed UAA study. Many regional creeks are impaired and have a TMDL to improved water quality. The uses of these streams are not clear as to what level of recovery can be expected. Straight Creek has many unique particulars which will present obstacles in achieving uses. Understands that obvious improvements can be made, but it may not be enough to achieve a non-impaired status.
Joseph J. Tannery, Virginia Staff Attorney Chesapeake Bay Foundation (CBF)	The law is written such that private parties may petition the Board for permission to conduct a UAA, however, the law does not entitle private parties to conduct UAAs even where reasonable grounds were presented. This is the first ever request for a privately conducted UAA under the new law and could set precedent for all future attempts to lower water quality standards for all non-tidal waters, including those affecting the Chesapeake Bay. Designated uses are the backbone of all water quality based protections in the Commonwealth. Changes in designated uses may cause irreversible water quality consequences. If a Clean Water Act (CWA) designated 'fishable/swimmable/aquatic life' use is downgraded based on inadequate information, biased or superficial analysis, water quality-based protections that might have enabled the water to achieve the goals in the CWA may never be put into place and the true potential of the water body may never be realized and the resource lost forever. The Group fails to quality as an aggrieved party under VA law. "Aggrieved" is a legal term used to denote a party that has been denied some legal or equitable right. The Total Maximum Daily Load (TMDL) does not infringe upon any legal rights or cause inequitable burdens to the Group as TMDLs affect point and nonpoint sources.

	The Group must be required to meet a stringent standard of evidence, both in quantity and quality of evidence when demonstrating "reasonable grounds" for unattainability. Taking into account the presumption of attainability in the CWA regulations, CBF believes that within the continuum of the "reasonable grounds" standard of evidence, the Group must be required to provide a level of evidence that more closely approximates clear and convincing proof of unattainability. The Group fails to provide adequate and objective evidence to justify the approval of a UAA. These tests must be met to determine whether a UAA is warranted: (1) downstream uses will be protected; (2) Is the cause of impairment natural and can the impairment be controlled by available, affordable pollution control measures and: (3) If the use is not an existing use. There is no evidence supporting these three tests. The section that describes "factors justifying a use change" lack documentary evidence and largely consists of subjective opinions and invokes worst case scenarios (homes, roads, and bridges would have to be uprooted to meet the designated use). However, the TMDL shows that the creek can meet it's designated used without such drastic measures. Determinations by the Board of factual and evidentiary adequacy of the groups "reasonable grounds" document will set the precedent for all future designated use challenges in the Commonwealth. The Board should set a high bar for the amount and quality of evidence a private party supplies in order to obtain approval to conduct a UAA. The Commonwealth has a duty to protect and restore water quality and cannot give up on restoring water bodies held in the public trust. Article XI of the Constitution of Virginia makes it the policy of the Commonwealth to protect its atmosphere, lands and waters from pollution, impairment or destruction for the benefit, enjoyment and general welfare of the people of the Commonwealth. The Straight Creek watershed is 91% forested, 7% mined and less than 1% urban. Designated uses should not be abandoned in this lightly populated, heavily forested area without sufficient justifications. If so, there is little hope in maintaining water quality standards elsewhere in the Commonwealth. The Group's reasonable grounds document ignores the Group's contributions to the degradation of Straight Creek. The same mining operations seeking lowered standards in this stream have caused several breaches and spills of pollutants into Straight Creek over the past decade. Under the laws of Virginia, the Commonwealth is under no obligation to move forward with a request for a UAA. Where conflicts of interest exist the Commonwealth should conduct the UAA. The Group has a direct conflict of interest and are responsible for several coal sludge spills that have played a part in the impairment. They Group is directly at odds with the need for a scientifically unbiased and objective UAA.
Wade Biddix, US Dept of Agriculture, Natural Resource Conservation Service (NRCS)	Much of documentation is speculation. Analysis needs to show what type of aquatic community is possible under current conditions, if pollutant stressors are reduced. NRCS (with others) have been involved with watershed planning in this area. Evidence exists that the aquatic community is recovering in Straight Creek following a 'blackwater discharge' from coal slurry ponds. This recovery indicates the aquatic life use is attainable. The watershed plan they are developing will address some of the acid mine drainage problems and the watershed will continue to improve.
Cindy Kane, US Fish and Wildlife Service (USFWS)	The aquatic life use must be retained as it is an existing use and existing uses cannot be removed from a waterbody (40 CFR 131.10(h)(1) and (2)). Further consideration of alternatives to evaluate aquatic life uses should be evaluated. USFWS could contribute to that effort.

Richard A. Parrish, Southern Environmental Law Center	The implication of the study is that it would be unreasonably expensive to restore water quality and aquatic life in Straight Creek. Without knowing what measures are necessary to restore water quality we believe the study is premature and would undercut the viability of such an effort. The TMDL implementation plan should be completed first, other similar restoration plans should be evaluated for their social and economic difficulty before the Board can evaluate the need for further study such as this UAA.
Dr. Leonard Smock, Virginia Commonwealth University, Member VA TMDL Ad Hoc Committee	There is not enough information to determine the likelihood of the UAA changing the use designation or sufficient evidence to determine if the UAA should be allowed. A UAA might be useful to better determine if the designated use might be altered. Does not agree that past degradation activities should rule out remediation.
Dr. Tamim Younos, Virginia Tech, Member VA TMDL Ad Hoc Committee	Overall, reasonable grounds is presented with a few items of concern. The UAA should be done before the TMDL to define if the designated uses are appropriate. If the uses are inappropriate, then the segment can be delisted before an expensive TMDL study is initiated. The report should indicate the extent of aquatic life and other overlapping impairments. The citation for the DEQ study on page 2 and the VSCI study should be provided. Where is the reference stream for Straight Creek? What is the VSCI for the reference stream? What is the relevance of UAA's in Kansas and Alaska cited on page 3? More photos are needed to help the reader understand the existing condition.
Theresa Carter, Department of Conservation and Recreation (TMDL Watershed Field Coordinator Upper Tennessee and Big Sandy Watersheds Office)	A UAA cannot be conducted to remove an existing use (40 CFR 131.10(g)). The Group did not demonstrate that the aquatic life use was not an existing use in Straight Creek. There is inadequate cost-benefit information in the document to determine if attainment is infeasible. Development of the TMDL implementation plan would help answer this question and should be the next step. The TMDL process is misrepresented as it does consider all land uses. The Group must follow all state and EPA guidance and regulations in coordination with the DEQ, DMME and DCR in order to take the lead in TMDL implementation. If a designated use is deemed attainable through cost effective and reasonable pollutant control measure, then it cannot be removed. A human activity that was not mentioned in the report was the impact that mining has had in changing the creek. The Tennessee Valley Authority information stated in the report is outdated (1965). Straight Creek has 37 mussel species, including six endangered species. Twelve of the top 24 cave communities in VA are in this area, which is the most significant karst area in the state. With these types of resources, all consideration should be given to improving water quality.

Attachment III: Response to Comments

Additional Information in Support of
Straight Creek UAA Proposal
and in Response to Comments at Public Meeting on January 26, 2007

1. Existing Use Status
    a. Available historical information regarding Straight Creek's biological condition indicates that:
        i. Sensitive organisms were likely impacted very early in development of the watershed. Mining and timbering operations developed beginning in 1905 (TVA 1965), and the "…decline of mussel fauna in the Powell River in Virginia was prophesied by Ortmann (1918).
        ii. Fish populations in Straight Creek are likely no worse today than they were in 1968.
            1. Preliminary TVA fisheries data indicate that a 1968 fish survey in the North Fork Powell River upstream of Straight Creek identified 17 species.
            2. The mouth of Straight Creek could be reasonably expected to support similar species diversity in 1968 since fish communities at the mouths of tributaries typically resemble fish communities in their receiving streams.
            3. A fish survey of Straight Creek in 2006 identified 17 species, 11 of which were common to the 1968 TVA NFP survey.
            4. Variations in diversity can be expected due to landscape variables such as stream order and gradient (Angermeier & Winston 1999), but these preliminary data suggest that fish diversity in Straight Creek is no different today than it was in 1968.
    b. Additional biological information will be collected and examined during the UAA process. Available information indicates that the current

Designated Aquatic Life Use (DALU) is not an existing use for each of the following reasons:

i. The DALU is expressed as a narrative statement under Virginia law without corresponding numeric criteria. The DALU attainment criterion is defined by agency policy as a "Nonimpaired" rating for benthic assessment using DEQ's RBP assessment method (VDEQ 2006(a)).

ii. Straight Creek has been identified as not meeting its DALU on Virginia's 303(d) list since 1996.

iii. Benthic data in the Straight Creek TMDL report indicate an average (n=13, 1991-2004) RBP rating of "Moderately Impaired" (40% comparable to reference) and a VASCI score of "Severe Stress" (38 out of 100). Note: see *Using Probabilistic Monitoring Data to Validate the Non-Coastal Virginia Stream Condition Index* (VDEQ 2006(b)) for a full description of VASCI scoring.

iv. Due to SMCRA required improvements, water quality is likely no worse today than it was in 1975

    1. The U. S. Geological Survey noted that water quality was generally worse pre-SMCRA than after SMCRA-mandated reclamation (USGS 2000)
    2. A declining population (an estimated 1,353 - Straight Creek TMDL report) and the installation of a sewer system for portions of the area suggest that water quality problems are less severe today than in 1950.

v. Judging by the remaining infrastructure, the urbanization modifications of Straight Creek have likely exerted continuous stress on aquatic life since development peaked in the 1950s. Current land use impacts are likely no worse than pre-1975 impacts based on reports from the 1960s (TVA 1963, 1965).

1. Intensive development of the watershed began in the early 20th century (St. Charles est. c.1906), peaking around 1940-1950.
2. Populations were highest around 1950
    a. St. Charles – 550
    b. Bonny Blue (Baileys Trace headwaters) ~3,000
    c. Benedict (Straight Creek headwaters) ~1,500
3. Most infrastructure remains – 1200 structures, plus roads, bridges, rail, etc. – but populations sharply declined as of 1960
    a. St. Charles – 368
    b. Bonny Blue – 130
    c. Benedict - 30

vi. Despite some improvement in water quality and efforts to address land use impacts, the DALU is still not attained. Therefore, based on the information available, the DALU (as defined using DEQ policy) was likely never attained on or after November 28, 1975. The UAA process will include a detailed assessment of the nature and extent of any existing uses, as well as the highest attainable uses.

2. Available information showing that human caused conditions and/or hydrologic modification may be limiting use attainment includes the following physical and water quality information:
    a. Estimated extent of Straight Creek with some type of channel alteration: nearly 100% of the approximately 6 miles. Approximately 3.9 miles are dramatically altered. These modifications include walls, revetment, diversion, relocation, shoring, incision, bank clearing, and dredging. For example:
        i. Walls – 1.1 mi near St. Charles since at least 1965 (TVA 1965); In 2007 - approx. 1.5 mi of stream with one or both banks walled,

about 50% of the channel from St. Charles to Monarch

ii. Channel Incision – Straight Creek and Baileys Trace banks near St. Charles *averaged* 4 ft above water surface in 1960s (TVA 1965). This is characteristic of most of the watershed based on preliminary visual estimates.

iii. Revetment – Channel revetment of varied magnitude has occurred with streamside residential development for approximately 2.5 miles from below Stone Creek upstream to St. Charles.

b. Estimated extent of historical flooding and flood control measures

i. Substantial flooding occurred in the watershed, with significant damage from 5-yr flood events. Initial investigations of historical records and citizen interviews have identified 15 major floods in St. Charles: Jan 1918, Dec 1926, Mar 1929, Jan 1932, Mar 1934, Feb 1939, Feb 1944, Jan 1946, Feb 1948, Jul 1949, Dec 1949, Jan 1957, Jan 1959, Mar 1963, and Apr 1977.

ii. Recognizing the need for flood control, TVA to create an immediate flood relief plan in 1963 and a longer term plan in 1965 for St. Charles.

1. The plans consisted of "…bank clearing and…dredging and cleaning of both [Straight Creek and Baileys Trace] stream channels through town…"
2. The plans called for clearing and dredging of 6000 feet in Straight Creek and 2000 feet in Baileys Trace.

c. Estimated proportion of watershed where Rosgen stream channel and riparian zone restoration could be conducted

i. Approximately 80% of the nearly 1200 structures in the watershed are located within 200 ft of the stream bank.

ii. Upstream of Monarch – about ¼ mile

iii. Monarch to St. Charles – little or no room; road is at most 17m from stream and residential lawns or railroad abut the stream.

iv. St. Charles to Maness – approximately ¾ mile meets spatial

requirements

v. Maness to Stone Creek – approximately ¼ mile has potential
vi. Baileys Trace – one bank is paved road, the other bank is steep mountainside for most of its length
vii. Gin Creek – one bank is road, the other bank is residential lawns for most of its length
viii. Stone Creek to Mouth – approximately 0.15 of 0.4 mile
ix. Estimated proportion of Straight Creek within 10m of road: 80%
x. Estimated proportion of Straight Creek abutting railroad bed: 60%
xi. Estimated proportion of Straight Creek banks that are privately owned: at least one bank for most of its length

d. DEQ field biologist comments indicate that habitat may be limiting the benthic community. Field logsheets for RBP Habitat Assessment were provided to the Group by DEQ during TMDL development. Several of the logsheets indicate the biologist's professional opinion that habitat conditions may be limiting the benthic community.
e. Quantitative EMAP Physical Habitat surveys were conducted at four sites in Straight Creek (concurrent with DEQ monitoring sites) and one site each in four tributaries (Stone Cr., Pucketts Cr., Baileys Tr., Gin Cr.). Preliminary data for key metrics are presented in Table 1.

Table 1. Preliminary EMAP Physical Habitat Data for Straight Creek Watershed (8 sites total)

Channel Morphology	**Mean**	**Substrate**	**Mean**
Incision height (m)	2.2	Est. geometric mean substrate dia. (mm)	35
		Log_{10} Relative Bed Stability	-0.4 (Impaired)
Fish Cover and Woody Debris	**Mean**	**Riparian Vegetation Cover and Structure**	**Mean**
Large woody debris (areal proportion)	0	Canopy density at bank (%)	60
Riparian Human Disturbance (proximity-weighted metrics: 0 = not observed, 1.5 = on bank throughout reach)			
Small scale disturbances	**Mean**	**Large scale disturbances**	**Mean**
Walls/Channel Revetment	1.13	Row Crops	0.0
Buildings	0.53	Pastures	0.0
Pavement	0.61	Logging	0.0
Roads/Railroads	0.71	Mining	0.0
Pipes	0.41		
Trash	1.18		
Lawns	0.44		
Small-scale weighted sum (max = 10.5)	*5.01*	*Large-scale weighted sum (max = 4)*	*0*
All Types (proximity-weighted sum of 11 types; max = 16.5)			**5.01**

i. Absolutely no Large Woody Debris (LWD) was observed. LWD provides important fish habitat and hydraulic energy dissipation. Most LWD was likely washed out through flooding or removed manually to prevent flooding. Restoring LWD would run counter to flood control efforts and vice versa.

ii. Streambed substrate is unstable at all sites. All sites rate "Impaired" for benthic invertebrate assemblages in the Mid-Atlantic Highland region as determined by regional stream ecologists (Kauffmann et al 1999).

iii. Mean substrate particle size is smaller than in other ecoregion streams of similar gradient (USEPA MAIA 1997-98 data). Flood energy greatly influences substrate particle size and stability.

iv. Incision height is about twice as great as other ecoregion streams (USEPA MAIA 97-98), resulting in flood hydraulic energy being confined to the channel and substrate.

v. Bank canopy density averaged 60% for the surveyed reaches. This number is lower than the 90% bank canopy for other streams in the

ecoregion (USEPA MAIA 97-98). The 60% canopy observed is likely not representative of the entire watershed since EMAP sites were generally not coincident with heavy development. The exception was the station at RM 0.40, where bank canopy density was only 23% due to residential development on both banks.

vi. Small-scale human disturbance was on average observed over nearly half the length surveyed (5.01/10.5 = 47.7%) and within or adjacent to the 10m riparian corridor. This may be an underestimate since sites were generally not located near heavy development.

f. Riparian and instream disturbances have likely induced and currently maintain a substantial shift in stream ecosystem energy source.

i. Benthic invertebrate assemblage data indicate an altered food web, which is one of five ecological factors influencing the aquatic community (USEPA 2005).

ii. The benthic community is 35.2% filter-feeders (based on 13 benthic samples from 1991 – 2004 listed in the Straight Creek TMDL report).

iii. Removal of the canopy has increased the stream's exposure to sunlight. This has likely contributed to an increase in primary production and available suspended food for the filter-feeding organisms.

g. Available information about water quality limitations includes:

i. The TMDL report for Straight Creek specifies a 48% reduction in TDS loading from overland and rainfall driven load sources.

ii. TDS concentration (not loading) is what is important to aquatic organisms (toxicity, osmotic stress, etc.).

iii. TDS concentration (as measured with a continuous conductivity logger) was observed to be highest during the low precipitation and/or low flow times of year (Figure 1) in Straight Creek (RM 0.11).

iv. TDS concentration (conductivity) dropped dramatically in direct response to rainfall (Figure 1).

v. When the TDS concentration is highest, the source cannot be attributed to overland flow (e.g. surface runoff).

vi. Conventional/cost effective measures (e.g., sediment ponds) to control TDS loading from overland sources during runoff events are likely ineffective at controlling in-stream TDS concentrations at low flow periods.

vii. High in-stream TDS concentrations are attributable to infiltration and interflow (i.e. underground mine works, AML, AMD, etc.) (Straight Creek TMDL report).

viii. Due to practical limitations and concern for human safety, remediation of underground mine works are likely infeasible. Specifically, mine blowouts can occur when there is a significant buildup of pressure from sealing a mine and pose a threat to both the environment as well as human life (KDSMRE 1994).

ix. The effect on TDS in groundwater from reclaiming AML surface disturbances is variable.

    1. Areas that have a rough surface and retain water may have some potential for reducing infiltration/interflow through re-grading and re-vegetation. However, by reducing infiltration, overland flow may be increased thereby increasing hydraulic energy in the stream channel. This may exacerbate the problematic flash flooding in the watershed.
    2. Conventional AMD treatments (e.g., liming, limestone addition, anoxic drains) were designed to reduce acid and metals and will likely increase TDS concentration by increasing the in-stream dissolved calcium concentration.

x. Available information suggests that historic land uses in Straight Creek may inhibit reductions in critical in-stream TDS

concentrations. The UAA study will further examine the feasibility of TDS reductions. In addition, as part of TMDL implementation, monitoring associated with required effluent limits and cost-effective/reasonable BMPs will help project TDS reductions and their impact on aquatic life.

3. Cost Estimates for Attaining DALU
    a. AML reclamation (DMLR est.):
    $10,000/acre x 2100 acres = **approx. $21 million**
    b. Stream channel restoration following Rosgen methods (estimated, for approx. 6 miles of Straight Creek mainstem)
        i. Instream habitat (USFS 2004, CH2M Hill 2003):
        $150-300/ft x 6 mi = **approx. $4.75 - $9.5 million**
        ii. Riparian corridor (USDA Forest Service 2003):
        $2,500/acre x 6 mi x 10m buffer per bank = **approx. $120,000**
    c. Total estimated costs for AML and channel/riparian restoration in Straight Creek mainstem ONLY: up to **$30.6 million;**
    d. Total estimated costs for restoration of AML and all 38.1 miles of stream in watershed: up to **$81 million**
    e. These cost estimates assume that the necessary space is available for riparian restoration. Most of the watershed has private land adjacent to the stream. Relocation of structures and other improvements will increase total restoration costs.

4. Refinement of uses and criteria (e.g., Tiered Aquatic Life Uses) is one approach to meet minimum national water quality goals
    a. Other States' UAA efforts and TALUs
        i. Virginia – designated tiered aquatic life uses for the Chesapeake Bay and then assigned a range of water quality criteria to meet these different tiers.

ii. Idaho – conducted UAA and removed ALU based on mining-related human caused conditions
iii. Maine – has limited-use ALU tier to allow for changes in benthic community composition
iv. Colorado – conducted UAA and removed ALU for "legacy mining sites"
v. Minnesota – has focused UAA efforts on addressing hydrologic modifications (i.e., "canalization")
vi. Ohio – conducts a UAA and designates "Modified Warmwater Habitat" ALU where a stream fails to meet all of the criteria for other ALU tiers.

b. Virginia's SCI validation report proposes ALU tiers along with numeric criteria corresponding to SCI scores.

5. Summary
   a. Available information suggests that Straight Creek has not attained its DALU on or after November 28, 1975. Land uses and their impacts on aquatic life have likely remained constant or improved since 1975. Therefore, it is not likely that Straight Creek ever attained the DALU as interpreted by agency policy.
   b. Restoration costs for AML reclamation and stream channel restoration may approach $81 million. More comprehensive cost estimates will be developed during the UAA process.
   c. The UAA process and ALU refinement are sound management tools as demonstrated by their use in Virginia and other states. Refinement of uses and associated criteria can help ensure realistic and achievable water quality goals.
   d. Human caused conditions and/or hydrologic modifications may be limiting DALU attainment. A UAA will be useful to further quantify the limiting factors and determine the highest potential biological condition.
      i. The physical factors impacting aquatic life have been extensively

modified by over 100 years of development in the watershed. Most of that modification is likely not remediable and therefore limits aquatic life potential. The human need to prevent flood damage to property is at odds with the aquatic life needs of instream and riparian habitat, natural flow regime, and a balanced food web.

ii. Impacts from TDS may be difficult to remediate due to the complex nature of TDS loading in Straight Creek. Preliminary information suggests that TDS control measures are of little effect during the low flow conditions when TDS most impacts aquatic life. Opportunities for remediation of AML exist, but each opportunity must be evaluated individually to determine feasibility. Conventional AML reclamation may in some cases reduce TDS while exacerbating flash flooding risk in the watershed. In other cases, it may actually increase TDS loading.

iii. Historical land uses have extensively altered physical, chemical, and biological conditions in the Straight Creek watershed. Due to spatial, technical, social, and natural limitations, these alterations prevent attainment of the Designated Aquatic Life Use.

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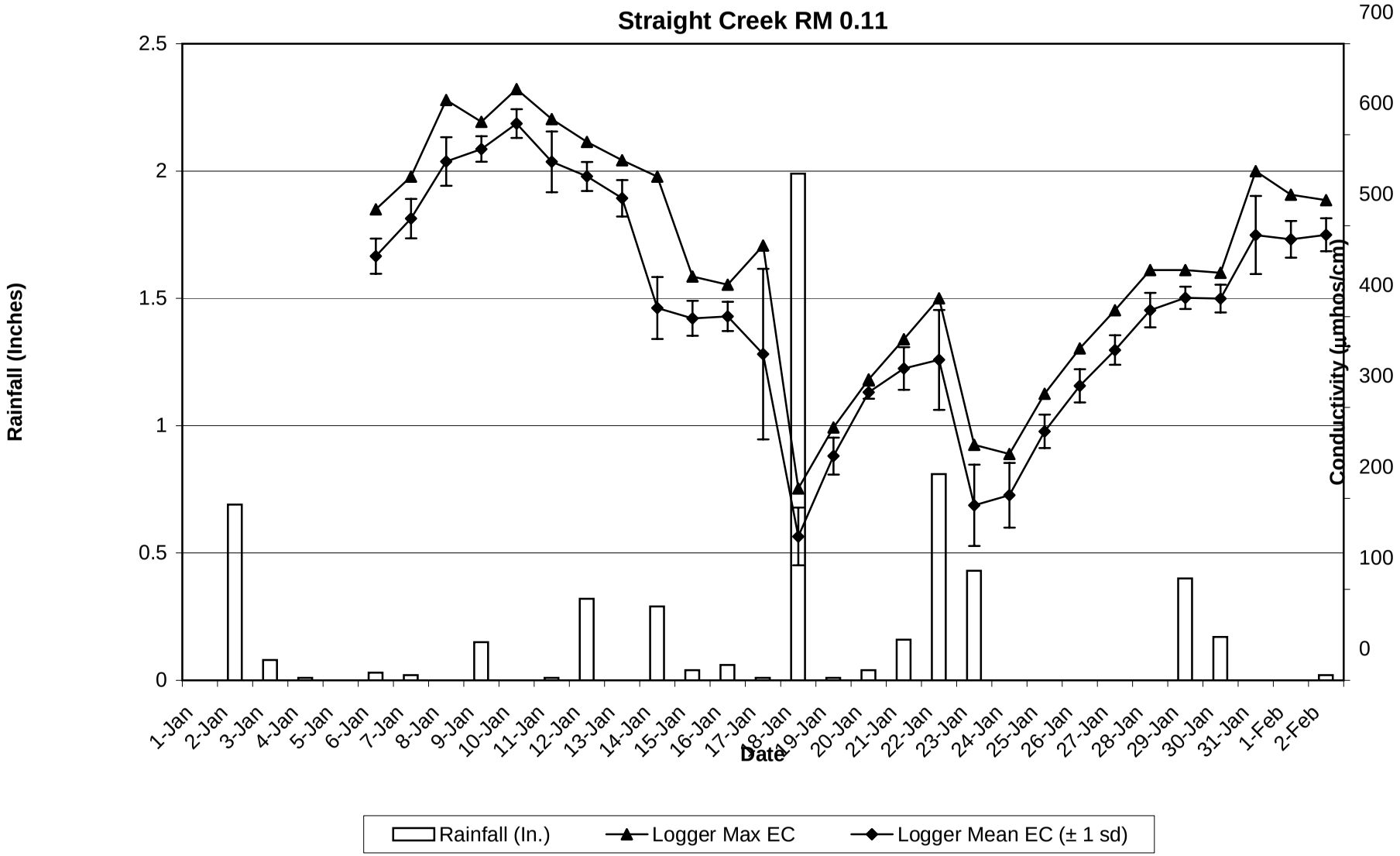
Figure 1. Specific Conductivity & Rainfall
01Jan06 - 02Feb06
Straight Creek RM 0.11



Attachment IV: SWCB Meeting Minute 13

COMMONWEALTH of VIRGINIA

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EXCERPT FROM THE PROCEEDINGS OF THE STATE WATER CONTROL BOARD AT ITS MEETING ON MARCH 8 AND 9, 2007

MINUTE NO. 13 Request to Conduct an Aquatic Life Use Attainability Analysis for Straight Creek, Lee County

Alan Pollock (DEQ Office of Water Quality Programs) made the staff presentation regarding a request from the Virginia Coalfields TMDL Group to conduct a Use Attainability Analysis for Straight Creek, Lee County. The request is contained in a document, dated October, 2006, entitled "Reasonable Grounds Documentation to Conduct an Aquatic Life Use Attainability Analysis for Straight Creek, Lee County." This documentation asserts that attainment of the designated use for aquatic life in Straight Creek is not feasible because many of the impacts on the watershed are irreversible.

Mr. Pollock explained that this document was submitted in accordance with a new section in the Code of Virginia, adopted by the 2006 General Assembly, which allows for an aggrieved party to submit reasonable grounds indicating that the attainment of the designated use for a water is not feasible, then the Board, after public notice and comment, may allow the aggrieved party to conduct a use attainability analysis according to criteria established pursuant to the Clean Water Act and a schedule established by the Board. The law also allows, if applicable, for the schedule to address whether TMDL development or implementation for the water should be delayed.

Mr. Pollock provided some background describing what a Use Attainability Analysis, or UAA, is and the regulatory options that are available based upon the results of the study. Virginia has never proceeded to remove an aquatic life use, although subcategories for the aquatic life use have been established for the Chesapeake Bay. There also have been about five requests for variances for chlorine and ammonia, although only one was approved, but that discharger is no longer in operation.

Federal and state regulations include very specific criteria that must be followed when dealing with changes to designated uses, such as:

- The Board may not remove an existing use

- The Board may not remove a use if the use will be attained by implementing technology-based effluent limits for point sources or by implementing cost-effective and reasonable BMPs for non-point source control
- Uses in downstream waters must be protected

Conducting a UAA study is not a regulatory action. After the UAA is completed, if the decision is to move forward, then any change to the standards need to go through the regulatory process in accordance with the VA Administrative Process Act, and also be approved by EPA

A notice of public comment on the proposed request to conduct a UAA study in Straight Creek was published in the Virginia Register on October 5, 2006. The comment period ended November 9, 2006.

Comments from thirteen groups were received and summarized in the Board memo. The environmental organizations urge DEQ to demand more objective information from the Group. They also expressed concern that the aquatic life use is an existing use which cannot be removed. The regulated community asked the Board to move forward and allow the UAA to be conducted. Based upon a stakeholders meeting on January 26, 2007, the Coalfields Group provided additional information on February 2 to supplement their initial submission.

In the documentation submitted by the Coalfields Group they highlight available information showing that human caused conditions and hydrologic modifications may be limiting the attainment of the designated use and therefore, conducting a UAA study is warranted.

Mr. Pollock reported that DEQ staff has worked closely with staff from the Department of Mines, Minerals and Energy throughout the process of developing the TMDL for Straight Creek, and in reviewing this proposal for conducting a UAA study on Straight Creek. DMME has the permitting authority for dischargers from coal mining operations.

DEQ also discussed this proposal with EPA Region III staff. They indicated that EPA allows third parties to conduct UAA studies without any presentation beforehand that reasonable grounds exist that attaining the designated use is not feasible. From their initial review of the proposal, EPA indicated it was "a pretty decent, thorough proposal". They were impressed that the Group proposes to put together a public participation plan for the UAA study. EPA also indicated if the UAA study is pursued, they would like to be involved and kept apprised as the study moves forward.

DEQ and DMME staff believes that implementation of cost-effective and reasonable best management practices as well as improvements in operational practices for permitted facilities will result in significant improvement of water quality conditions in Straight Creek. The agencies would have some concerns about conducting a UAA for Straight Creek, prior to **any** corrective actions having been implemented following the TMDL. Therefore, staff favors the approach in the proposal that implementation would proceed concurrently with the UAA study.

Also, the agencies concur that there is some degree of uncertainty with respect to the level of aquatic life use that can be supported by Straight Creek.

This is the first proposal submitted under Virginia's new law, so there are no criteria established for setting the "reasonable grounds" test for whether attainment of a designated use is feasible.

Mr. Pollock reported that in staff's view proceeding with the study has several advantages:
1. It will provide additional information to DEQ about aquatic life use in Straight Creek;
2. It can help to identify the cost-effective and reasonable BMPs that apply to Straight Creek and to provide some incentive for their implementation; and,
3. It was the TMDL process for Straight Creek and the concerns and controversy it raised, that became the impetus behind the adoption of this new section in the VA Code. Thus, conducting this study on Straight Creek will also help in defining the framework for future UAA studies under the new law.

One individual indicated an interest to speak before the Board. Mike Gerel, with the Chesapeake Bay Foundation, indicated their opposition to allowing the UAA study to proceed at this time prior to full implementation of pollution reduction actions. He also indicated concern that the Board may receive many other requests for UAA studies for the purpose of lower water quality standards in lieu of implementing needed management actions to improve water quality.

After the staff presented its recommendation, the Board agreed, prior to taking a vote on the recommendation, to modify the wording in the first condition to read as shown below.

Recommendation

Staff proposes the Board grant approval, subject to the conditions listed below, for the Virginia Coalfields TMDL Group to conduct a use attainability analysis for aquatic life in Straight Creek according to criteria established pursuant to the Clean Water Act and in conformance with 9 VAC 25-260-10 of the Virginia Water Quality Standards.

1. A TMDL Implementation Plan to address the aquatic life use impairment shall be submitted to DEQ by December 31, 2007 and approved by the Board. The Plan must identify the reasonable and cost-effective remediation steps required for use attainment under 9 VAC 25-260-10 subsections E and I.

2. A UAA study plan shall be presented for public comment and approved by DEQ before initiation of the UAA study.

3. On-going implementation of cost-effective and reasonable best management practices identified in the TMDL Implementation Plan and VPDES permits shall continue so the response of the aquatic system to the implementation of these practices is included in the UAA study.

4. Upon completion of the UAA study, DEQ staff will report back to the Board whether the results of the UAA study are deemed consistent with federal and state regulations and warrant initiating a rulemaking to establish subcategories of the designated use for aquatic life in all, or portions of, Straight Creek.

5. Moving forward with this study does not establish any precedent for what constitutes "reasonable grounds" under § 62.1-44.19:7 of the Code of Virginia.

Board Decision

The Board voted in the majority [6 to 1, Mr. Thompson voting no] in favor of the motion to accept the staff recommendation with amendment.

Ellen Gilinsky, Ph.D
Director
Division of Water Quality Programs